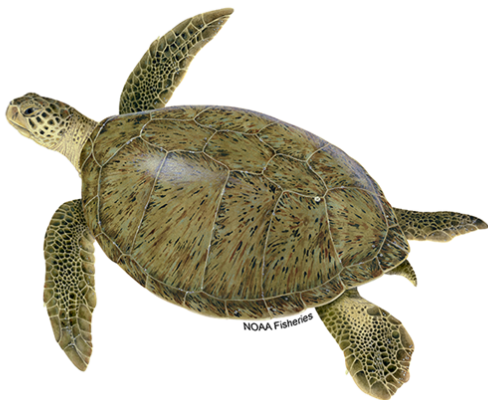




# Green Turtle

## Green Turtle

*Chelonia mydas*



### Protected Status

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#### **ESA ENDANGERED**

*Central South Pacific DPS*

#### **ESA ENDANGERED**

*Central West Pacific DPS*

#### **ESA ENDANGERED - FOREIGN**

*Mediterranean DPS*

#### **ESA THREATENED**

*Central North Pacific DPS*

#### **ESA THREATENED**

*East Pacific DPS*

#### **ESA THREATENED**

*North Atlantic DPS*

#### **ESA THREATENED**

*South Atlantic DPS*

#### **ESA THREATENED - FOREIGN**

*East Indian-West Pacific DPS*

#### **ESA THREATENED - FOREIGN**

*North Indian DPS*

#### **ESA THREATENED - FOREIGN**

*Southwest Indian DPS*

**ESA THREATENED - FOREIGN**

*Southwest Pacific DPS*

**CITES APPENDIX I**

*Throughout Its Range*

**Quick Facts**

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<b>WEIGHT</b>	Adult: 250 to 400 pounds
<b>LIFESPAN</b>	Unknown, but estimated to be 70 years or more
<b>LENGTH</b>	Adult: 3 to 4 feet
<b>THREATS</b>	Bycatch in fishing gear, Climate change, Direct harvest of turtles and eggs, Disease, Loss and degradation of nesting and foraging habitat, Ocean pollution/marine debris, Vessel strikes
<b>REGION</b>	New England/Mid-Atlantic, Pacific Islands, Southeast, West Coast, Foreign



*Green sea turtle. Photo: NOAA Pacific Islands Fisheries Science Center*

# About the Species

The green sea turtle is the largest hard-shelled sea turtle. They are unique among sea turtles in that they are herbivores, eating mostly seagrasses and algae. This diet is what gives their fat a greenish color (not their shells), which is where their name comes from.

Green turtles are found throughout the world. They nest in over 80 countries and live in the coastal areas of more than 140 countries. Historically, green turtles were exploited for their fat, meat and eggs, causing global population declines. Many countries, including the United States, prohibit the killing of sea turtles and collection of their eggs. However, in some areas, the killing of green turtles for their meat or to supply shells to the wildlife trafficking trade remains a threat to their recovery. Bycatch in commercial and recreational fishing gear, vessel strikes, loss of nesting habitat from coastal development, and climate change are the biggest threats facing green turtles.

NOAA Fisheries and our partners are dedicated to protecting and recovering green turtle populations worldwide. We use a variety of innovative techniques to study, protect, and recover these threatened and endangered populations. We engage our partners as we develop measures and recovery plans that foster the conservation and recovery of green turtles and their habitats. And we fund research, monitoring, and conservation projects to implement priorities outlined in recovery plans.

## Population Status

Green turtles are found worldwide with [11 distinct population segments \(DPS\) listed under the Endangered Species Act](#). The largest green turtle nesting populations in the world are found at:

- Tortuguero on the Caribbean coast of Costa Rica—30,000 females nest per season (on average)
- Raine Island on the Great Barrier Reef in Australia—During a peak nesting season, up to 60,000 females nest on this island and the surrounding reef

Green turtles nest in over 80 countries, but in the United States, nesting green turtles are primarily found in the Hawaiian Islands, U.S. Pacific Island territories (Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa), Puerto Rico, the Virgin Islands, and Florida. Nesting also occurs annually in Georgia, South Carolina, North Carolina, and Texas.

The [2015 ESA status review of the green sea turtle](#) provides additional information for this species.

## Protected Status

### ESA Endangered

- Central South Pacific DPS

### ESA Endangered

- Central West Pacific DPS

## **ESA Endangered - Foreign**

- Mediterranean DPS

## **ESA Threatened**

- Central North Pacific DPS

## **ESA Threatened**

- East Pacific DPS

## **ESA Threatened**

- North Atlantic DPS

## **ESA Threatened**

- South Atlantic DPS

## **ESA Threatened - Foreign**

- East Indian-West Pacific DPS

## **ESA Threatened - Foreign**

- North Indian DPS

## **ESA Threatened - Foreign**

- Southwest Indian DPS

## **ESA Threatened - Foreign**

- Southwest Pacific DPS

## **CITES Appendix I**

- Throughout Its Range

## **Appearance**

Green turtles are the largest of all the hard-shelled sea turtles, but have a comparatively small head. A typical adult is 3 to 4 feet long and weighs 300 to 350 pounds. They have dark brown, grey, or olive colored shells and a much lighter, yellow-to-white underside. Their shells have five scutes running down the middle and four scutes on each side. Other distinct characteristics of the green turtle are their serrated beak on the lower jaws and two large scales located between the eyes.

## **Behavior and Diet**

Green turtles, like all sea turtles, are reptiles and must surface to breathe and lay their eggs on land. Green turtles migrate hundreds to thousands of kilometers each way between their foraging grounds and nesting beaches. They are solitary, night-time nesters.

The life history of green turtles involves a series of stages of development from hatchling to adult. After emerging from the nest, hatchlings swim to offshore areas, where they live for several years in pelagic habitat. Juveniles eventually leave the open ocean habitat and travel to nearshore foraging grounds in shallow coastal habitats, where they mature to adulthood and spend the remainder of their lives. Adults migrate every 2 to 5 years from their coastal foraging areas to the waters off the nesting beaches where they originally hatched to reproduce.

Green turtles are the only herbivorous species of sea turtle. Their diet mainly consists of algae and seagrasses, though they may also forage on sponges, invertebrates, and discarded fish. The East Pacific green turtle tends to eat more animal prey than other populations. Prior to recruiting to nearshore foraging areas, pelagic juveniles forage on plant and animal life found in oceanic drift communities (such as pelagic *Sargassum* communities).

## Where They Live

Green turtles are found worldwide primarily in subtropical and temperate regions of the Atlantic, Pacific, and Indian Oceans, and in the Mediterranean Sea.

In U.S. Atlantic and Gulf of Mexico waters, green turtles are found in inshore and nearshore waters from Texas to Maine, the U.S. Virgin Islands, and Puerto Rico. Important feeding areas in Florida include the Indian River Lagoon, the Florida Keys, Florida Bay, the Dry Tortugas, Homosassa, Crystal River, Cedar Key, and St. Joseph Bay.

In the eastern North Pacific, green turtles have been sighted as far north as southern Alaska, but most commonly occur from southern California to northwestern Mexico. Elsewhere in the U.S. Pacific, green turtles occur in Hawaii, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

Green turtles occur in many countries, making it critical to work together for their protection and recovery.

*World map providing approximate representation of the green turtle's range.*

## **Lifespan & Reproduction**

Green turtles are long-lived and could live for at least 70 years or more. Female green turtles reach maturity at 25 to 35 years. Every 2 to 5 years they undertake reproductive migrations and return to nest on a beach in the general area where they hatched decades earlier.

In the United States, the breeding season begins in late spring. Males mate with females on foraging grounds, along migratory pathways, and off nesting beaches. Green turtles lay about 110 eggs per nest and will nest every 2 weeks over several months before leaving the nesting area and returning to their foraging grounds.

After about two months incubating in the warm sand, the eggs hatch and the hatchlings make their way to the water. Hatchlings orient seaward by moving away from the darkest silhouette of the landward dune or vegetation to crawl towards the brightest horizon. On undeveloped beaches, this is toward the open horizon over the ocean.

## **Threats**

### **Bycatch in Fishing Gear**

A primary threat to sea turtles is their unintended capture in fishing gear which can result in drowning or cause injuries that lead to death or debilitation (for example, swallowing hooks, or flipper entanglement). The term for this unintended capture is [bycatch](#). Sea turtle bycatch is a worldwide problem. The primary types of gear that result in bycatch of green turtles include trawls, gillnets, longlines, hook and line, and pot/traps.

### **Direct Harvest of Turtles and Eggs**



Historically, green turtles were killed in extraordinarily high numbers for their fat, meat, and eggs. This led to the catastrophic global decline of the species. While illegal in the United States, killing green turtles and collecting their eggs remains legal in some countries and this can disrupt regional efforts to recover this species.

## **Loss and Degradation of Nesting Habitat**

Coastal development and rising seas from climate change are leading to the loss of nesting beach habitat for green turtles. Shoreline hardening or armoring (e.g., seawalls) can result in the complete loss of dry sand suitable for successful nesting. Artificial lighting on and near nesting beaches can deter nesting females from coming ashore to nest and can disorient hatchlings trying to find the sea after emerging from their nests.

## **Vessel Strikes**

Various types of watercraft can strike green turtles when they are at or near the surface resulting in injury or death. Vessel strikes are a major threat to green turtles, in particular large juveniles and adults near ports, waterways, and developed coastlines throughout their range. High boat traffic areas such as marinas and inlets present a higher risk to green turtles. Adult green turtles, in particular nesting females, are more susceptible to vessel strikes when making reproductive migrations and while they are nearshore during the nesting season.

## **Ocean Pollution/Marine Debris**

Increasing pollution of nearshore and offshore marine habitats threatens all sea turtles and degrades their habitats. The [Deepwater Horizon oil spill](#) was the largest offshore oil spill in U.S. history and affected nesting (including nesting females, eggs, and hatchlings), small juvenile, large juvenile, and adult sea turtles throughout the Gulf of Mexico. Ingestion of marine debris is another threat to all species of sea turtles. Green turtles may ingest marine debris such as fishing line, balloons, plastic bags, floating tar or oil, and other materials discarded by humans which they can mistake for food. They may also become entangled in marine debris, including lost or discarded fishing gear, and can be killed or seriously injured.

## **Climate Change**

For all sea turtles, a [warming climate](#) is likely to result in changes in beach morphology and higher sand temperatures, which can be lethal to eggs or alter the ratio of male and female hatchlings produced. Rising seas and storm events cause beach erosion, which may flood nests or wash them away. Changes in the temperature of the marine environment are likely to alter the abundance and distribution of food resources, leading to a shift in the migratory and foraging range and nesting season of green turtles.

## **Disease**

[Fibropapillomatosis](#) is a disease that causes external and internal tumors in green turtles. These tumors can significantly affect their ability to swim and feed and can lead to death. The disease is

most prevalent in green turtles and some evidence has linked the disease prevalence to degraded marine habitats.

## Scientific Classification

<b>Kingdom</b>	Animalia
<b>Phylum</b>	Chordata
<b>Class</b>	Reptilia
<b>Order</b>	Testudines
<b>Family</b>	Cheloniidae
<b>Genus</b>	<i>Chelonia</i>
<b>Species</b>	<i>mydas</i>

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## What We Do

### Conservation & Management

Since 1977, NOAA Fisheries and the [U.S. Fish and Wildlife Service](#) have shared jurisdiction of sea turtles listed under the ESA. A Memorandum of Understanding outlines our specific roles: NOAA Fisheries leads the recovery and conservation efforts for sea turtles in the marine environment, and the U.S. FWS leads the conservation and recovery efforts for sea turtles on nesting beaches.

We are committed to the protection and conservation of green turtles by:

- Working with partners to ensure compliance with national, state, and U.S. territory laws to protect sea turtles
- Cooperating with international partners to implement conservation measures and establish agreements, such as international treaties that protect sea turtles
- Researching, developing, and implementing changes to fishing gear practices and/or fishing gear modifications (e.g., [turtle excluder devices](#)), using large circle hooks in longline fisheries, and implementing spatial or temporal closures to avoid or minimize bycatch
- Designating critical habitat areas essential for the conservation of green turtles
- Protecting and monitoring green turtles in the marine environment and on nesting beaches



- Conducting research on threats and developing conservation measures that reduce threats and promote recovery
- Collecting information on the species biology and ecology to better inform conservation management strategies and to assess progress toward recovery
- Conducting and supporting education and outreach efforts to the general public by raising awareness on threats to sea turtles, highlighting the importance of sea turtle conservation, and sharing ways people can help sea turtles
- Working with partners to study and raise awareness about illegal sea turtle trade

[Learn more about our conservation and management efforts >](#)

## Science

We conduct various research activities on the biology, behavior, and ecology of green sea turtles. The results of this research are used to evaluate population trends, inform conservation management strategies, and to assess progress toward recovery for this imperiled species. Our work includes:

- Monitoring populations through vessel-based or aerial surveys, nesting beach studies, satellite tracking, genetics, and mark-recapture (flipper tagging) studies
- Studying foraging and reproductive behavior to understand demographics, physiology, habitat use, and resource requirements
- Tracking individuals over time to understand important aspects of their life history such as growth and age to maturity
- Evaluating life history and population health information from stranding and fisheries bycatch datasets
- Understanding impacts of change in environmental and ocean conditions on sea turtle abundance, distribution, and demographics
- Estimating population abundance and analyzing trends
- Monitoring fisheries impacts and designing fishing gear to minimize bycatch during commercial and recreational fishing operations
- Capacity building and training to share the latest scientific techniques and tools to monitor sea turtle populations globally

[Learn more about our research >](#)

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## How You Can Help

## Reduce Ocean Trash

**Reduce marine debris and participate in coastal clean-up events.** Responsibly dispose of fishing line - lost or discarded fish line kills hundreds of sea turtles and other animals every year. Trash in the environment can end up in the ocean and harm marine life.

**Reduce plastic use** to keep our beaches and oceans clean—carry reusable water bottles and shopping bags.

**Refrain from releasing balloons**—they can end up in the ocean where sea turtles can mistake them for prey like jellyfish or become entangled in lines.

[Learn more about marine debris >](#)

## Keep Your Distance

Admire sea turtles from a respectful distance by land or sea and follow these guidelines:

**Don't disturb nesting turtles, nests, or hatchlings.** If interested, attend organized sea turtle watches that know how to safely observe sea turtles.

**Never feed or attempt to feed or touch sea turtles** as it changes their natural behavior and may make them more susceptible to harm.

Boat strikes are a serious threat to sea turtles. When boating, **watch for sea turtles in the water, slow down, and steer around them.** If you encounter them closer than 50 yards, put your engine in neutral to avoid injury. Remember, *Go Slow, Sea Turtles Below!*

[Learn more about our marine life viewing guideline >](#)

## Protect Sea Turtle Habitat

Beaches are paramount for healthy sea turtle populations since females come to the shore to deposit their eggs into nests.

**Keep nesting beaches dark and safe at night.** Turn off, shield, or redirect lights visible from the beach—lights disorient hatchlings and discourage nesting females from coming onto beaches to lay their eggs.

**After a day at the beach, remove recreational beach equipment** like chairs and umbrellas so sea turtles are not entrapped or turned away. Also, fill in holes and knock down sandcastles before you leave—they can become obstacles for nesting turtles or emerging hatchlings.

**Do not drive on sea turtle nesting beaches**—vehicles can deter females from nesting, directly strike hatchlings and nesting turtles, damage incubating nests, and create ruts that prevent hatchlings from reaching the sea.

## Report Marine Life in Distress

If you see a stranded, injured, or entangled sea turtle, contact professional responders and scientists who can take appropriate action. Numerous organizations around the country are trained and ready to respond.

[Learn who you should contact when you encounter a stranded or injured marine animal >](#)

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## In the Spotlight

# Management Overview

Green turtles are protected under the [Endangered Species Act](#). Eleven distinct population segments (DPS) are listed as endangered or threatened. This means that the green turtle is in danger of extinction, now or in the foreseeable future, throughout all or a significant portion of its range. NOAA Fisheries is working to protect this species in many ways, with the goal of conserving and recovering each of the DPSs.

In the United States, NOAA Fisheries and the U.S. Fish and Wildlife Service have joint jurisdiction for sea turtles, with NOAA having the lead in the marine environment and U.S. FWS having the lead on the nesting beaches. Both federal agencies, along with many state and U.S. territory agencies and international partners, are working together to conserve and recover sea turtles and have issued regulations to eliminate or reduce threats to sea turtles.

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## Recovery Planning and Implementation

### Recovery Action

To help identify and guide the protection, conservation, and recovery of sea turtles, the ESA requires NOAA Fisheries and the U.S. FWS to develop and implement recovery plans which provide a blueprint for conservation of the species and measurable criteria to gauge progress toward recovery.

The major recovery actions for green turtles include:

- Protecting sea turtles on nesting beaches and in marine environments
- Protecting nesting and foraging habitats
- Reducing bycatch in commercial, artisanal, and recreational fisheries
- Reducing the effects of entanglement and ingestion of marine debris
- Reducing vessel strikes in coastal habitats
- Studying the impact of diseases on turtles
- Working with partners internationally to protect turtles in all life-stages
- Supporting research and conservation projects consistent with Recovery Plan priorities

Three recovery plans have been developed to recover and protect green turtle populations found in U.S. waters. Each focuses on the unique needs of green turtles in the various regions.

- [U.S. Population of Atlantic Green Turtle Recovery Plan](#)
- [U.S. Pacific Populations of the East Pacific Green Turtle Recovery Plan](#)
- [U.S. Pacific Populations of Green Turtle Recovery Plan](#)

The highly migratory behavior of sea turtles makes them shared resources among many nations, so conservation efforts for sea turtle populations must extend beyond national boundaries. This necessitates international collaboration and coordination. Learn more about international conservation efforts below.

## Implementation

NOAA Fisheries is working to minimize effects from human activities that are detrimental to the recovery of green turtles in the United States and internationally. Together with our partners, we undertake numerous activities to support the goals of the green turtle recovery plans, with the ultimate goal of species recovery.

Efforts to conserve green turtles include:

- Protecting habitat and designating critical habitat
- Reducing bycatch
- Rescue, disentanglement, and rehabilitation
- Eliminating the killing of turtles and the collection of their eggs
- Eliminating the harassment of turtles on beaches and foraging habitats through education and enforcement
- Consulting with federal agencies to ensure their activities are not likely to jeopardize the continued existence of listed species

Conservation efforts over the past several decades are showing success. The protection of nesting beaches, reduction of bycatch in fisheries, and prohibitions on killing sea turtles and collecting their eggs have led to increasing numbers of green turtles nesting in the United States. The number of nests has been trending upward in Florida (North Atlantic DPS) and in Hawaii (Central North Pacific DPS). While threats remain for green sea turtles globally, the increasing number of green turtles in Florida and Hawaii shows how domestic and international partnerships are making a real difference for some of our planet's most imperiled marine species.

*Green sea turtle grazing seagrass at Akumal Bay. Photo: P. Lindgren, CC BY-SA 3.0*

## Critical Habitat

Once a species is listed under the ESA, NOAA Fisheries evaluates and identifies whether any marine areas meet the definition of [critical habitat](#). Those areas may be designated as critical habitat through a rulemaking process. A critical habitat designation does not set up a marine preserve or refuge. Rather, federal agencies that undertake, fund, or permit activities that may affect designated critical habitat areas are required to consult with NOAA Fisheries to ensure that their actions do not adversely modify or destroy these designated critical habitats.

In 1998, NOAA Fisheries designated critical habitat for green turtles in coastal waters around Culebra Island, Puerto Rico.

[View the green sea turtle critical habitat map >](#)

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## Conservation Efforts

### Reducing Bycatch

NOAA Fisheries is working to reduce the bycatch of sea turtles in commercial and artisanal fisheries. Our efforts are focused on documenting bycatch, understanding how, why, and where sea turtles are bycaught, and how to reduce that bycatch. We work with partners and industry to develop modifications to fishing gear and practices to reduce bycatch and/or to reduce bycatch injuries. These modifications are required in certain U.S. commercial fisheries including gillnets, longlines, pound nets, scallop dredges, and trawls that unintentionally capture sea turtles. Measures include:

- Gear modifications
- Changes to fishing practices
- Time/area closures

In the United States, NOAA Fisheries has worked closely with the shrimp trawl fishing industry to develop [Turtle Excluder Devices \(TEDs\)](#) to reduce the mortality of sea turtles bycaught in shrimp trawls. TEDs are required in the shrimp otter trawl fishery and, in early 2021, in larger vessels participating in the skimmer trawl fishery.

Since 1989, the U.S. has [prohibited the importation of shrimp harvested in a manner that adversely affects sea turtles](#). The import ban does not apply to nations that have adopted sea turtle protection programs comparable to that of the United States (i.e., require and enforce the use of TEDs) or to nations where bycatch in shrimp fisheries does not present a threat to sea turtles (for example, nations that fish for shrimp in areas where sea turtles do not occur). The [U.S. Department of State is the principal implementing agency of this law](#) while NOAA Fisheries serves as technical advisor and provides extensive TED training throughout the world.

We are also involved in cooperative gear research projects, implementation of changes to gear and fishing practices, and safe handling protocols designed to reduce sea turtle bycatch and mortality in the Gulf of Mexico and Atlantic pelagic longline fisheries, the American Samoa [and Hawaii-based longline fisheries](#), the Atlantic sea scallop dredge fishery, the Virginia Chesapeake Bay pound net fishery, mid-Atlantic gillnet fishery, and non-shrimp trawl fisheries in the Atlantic and Gulf of Mexico.

### Fisheries Observers

[Bycatch](#) in fishing gear is the primary human-caused source of sea turtle injury and mortality in U.S. waters. The most effective way to learn about bycatch is to place [observers](#) aboard fishing vessels.

Observers collect important information that allows us to understand the amount and extent of bycatch, how turtles interact with the gear, and how bycatch reduction measures are working.

NOAA Fisheries determines which fisheries are required to carry observers, if requested to do so, through an [annual determination](#). Observers may also be placed on fishing vessels through our authorities under the [Magnuson-Stevens Act](#).

## Responding to Strandings and Entanglements

A stranded sea turtle is one that is found on land or in the water and is either dead or is alive but unable to undergo normal activities and behaviors due to an injury, illness, or other problem. Most strandings are of individual turtles, and thousands are documented annually along the coasts of the United States and its territories. Organized networks of trained stranding responders are authorized to recover dead turtles or assist live turtles and document important information about the causes of strandings. These networks include federal, state, and private organizations. The actions taken by stranding network participants improve the survival of sick, injured, and entangled turtles while also helping scientists and managers expand their knowledge about threats to sea turtles and causes of mortality.

Because sea turtles spend most of their life at sea and out of sight, information learned from strandings are an important way for us to identify and monitor problems that threaten sea turtle populations.

Within the U. S. and its territories, there are three regional networks that serve to document and rescue stranded and entangled sea turtles:

- Atlantic Ocean, Gulf of Mexico, and Caribbean: Coordinated under the [Sea Turtle Stranding and Salvage Network \(STSSN\)](#)
- Pacific Ocean (continental U.S. West Coast): Coordinated by NOAA's West Coast Regional Office
- Pacific Islands (Hawaii, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands): Coordinated by NOAA's Pacific Islands Fisheries Science Center and the Pacific Islands Regional Office

Periodically mass strandings of sea turtles, especially green and [Kemp's ridley turtles](#), occur in specific areas of the Atlantic and Gulf of Mexico coasts when water temperatures drop suddenly in shallow, inshore areas where turtles are present (i.e., cold stunning events). During these events, hundreds or even thousands of turtles may require rescue and care.

## International Conservation Efforts

The conservation and recovery of sea turtles requires international cooperation and agreements to ensure the survival of these highly migratory animals. We work closely with partners in many countries across the globe to promote sea turtle conservation and recovery. Two international agreements specifically focused on sea turtle conservation are:

- [Indian Ocean - South-East Asian \(IOSEA\) Marine Turtle Memorandum of Understanding](#)
- [Inter-American Convention \(IAC\) for the Protection and Conservation of Sea Turtles](#)

Additional international treaties and agreements that also protect sea turtles include:

- [Convention on International Trade in Endangered Species \(CITES\)](#) - Listed in Appendix I, which prohibits international trade of wild flora and fauna
- Cartagena Convention: Protected under Annex II of the [Specially Protected Areas and Wildlife \(SPAW\) Protocol](#)

## Regulatory History

The green turtle was first listed under the Endangered Species Act in 1978. In April 2016, the original listing was revised by [listing eight distinct population segments \(DPS\) as threatened and three DPS as endangered](#). The [2015 ESA status review](#) provided the scientific basis to revise the ESA listings.

In 1992, we finalized [regulations to require turtle excluder devices](#) (TEDs) in shrimp trawl fisheries to reduce sea turtle bycatch. Since then, we have updated these regulations as new information became available and TEDs were modified to improve their turtle exclusion rates.

We have also implemented other measures to reduce sea turtle bycatch in fisheries through regulations and permits under both the ESA and [Magnuson-Stevens Act](#). These requirements include the use of large circle hooks in longline fisheries, time and area closures/mesh size restrictions for gillnets, and modifications to Virginia pound net leaders and Atlantic sea scallop dredges.

[See all regulations to protect sea turtles >](#)

## Key Actions and Documents

### Actions & Documents

### Incidental Take

#### Final Annual Determination for 2020

NOAA Fisheries publishes the final Annual Determination (AD) for 2020, pursuant to its authority under the Endangered Species Act. Through the AD, NOAA Fisheries identifies U.S. fisheries operating in the Atlantic Ocean, Gulf of Mexico, and Pacific...

[> Final Annual Determination for 2020 \(85 FR 53684; August 31, 2020\)](#)



- [Proposed Annual Determination for 2020 \(85 FR 3880; January 23, 2020\)](#)
- [More Information: Sea Turtle Annual Determination](#)

Final Rule , [National](#)

**EFFECTIVE**

*09/30/2020*

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## Listing Green Sea Turtles Under the Endangered Species Act

NOAA Fisheries and the U.S. Fish and Wildlife Service issue a final rule to list 11 distinct population segments (DPSs) of the green sea turtle (*Chelonia mydas*; hereafter referred to as the green turtle) under the Endangered Species Act (ESA). Based on...

- [Final Rule \(81 FR 20057\)](#)
- [3rd Extension of Public Comment \(80 FR 51763\)](#)
- [2nd Extension of Public Comment \(80 FR 44322\)](#)
- [1st Extension of Public Comment \(80 FR 34594\)](#)
- [Proposed Rule \(80 FR 15271\)](#)
- [90-day Finding on Petition to Delist Hawaii Population \(77 FR 45571\)](#)
- [Original Endangered Species Act Listing Rule \(43 FR 32800\)](#)

Final Rule , [National](#)

**EFFECTIVE**

*May 6, 2016*

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## Critical Habitat for Green Sea Turtles

Pursuant to the Endangered Species Act of 1973 (ESA), NMFS is designating critical habitat for the threatened green sea turtle (*Chelonia mydas*) to include coastal waters surrounding Culebra Island, Puerto Rico, and the endangered hawksbill sea turtle ...

- [Final Rule](#)
- [Green Turtle Critical Habitat Map and GIS Data](#)

Final Rule , [Southeast](#)

**EFFECTIVE**

*October 2, 1998*

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## Recovery Plans for Green Sea Turtles

Recovery Plans for East Pacific, Pacific, and Atlantic populations of green sea turtles are available.

- [Notice of Availability for Pacific and E. Pacific Populations \(63 FR 28359\)](#)
- [Recovery Plan for U.S. Pacific Populations](#)
- [Recovery Plan for U.S. Pacific Populations of the East Pacific Green Turtle](#)
- [Recovery Plan for U.S. Population of Atlantic Green Turtle](#)

## Science Overview

NOAA Fisheries conducts research on the biology, behavior, and ecology of the green sea turtle. The results of this research are used to inform management decisions and enhance recovery efforts for the species.

## Population Assessments

Sea turtle population assessments ideally include information on the species' abundance and distribution, life history, and human impacts. This information can help NOAA Fisheries evaluate the effectiveness of conservation and recovery measures, and can help guide actions to enhance recovery. To estimate population abundance, researchers conduct aerial and vessel-based surveys of selected areas and capture and mark turtles in the water and on beaches. We also incorporate data collected on nesting beaches, via [stranding networks](#), and from [fisheries observer programs](#). Other information that informs sea turtle population assessments includes population structure (genetic analyses), age to maturity, survivorship of the various life stages (e.g., hatchling, juvenile, adult), foraging and reproductive behavior, movement and distribution, and habitat studies.

*Green sea turtle. Photo: Dave Burdick, NOAA PIFSC*

## Tagging and Tracking Studies

Satellite telemetry allows researchers to track sea turtles as they migrate between and within foraging and nesting areas. Tags are designed and attached in a manner that minimizes disturbance and/or harm to the turtle. The data help us understand migration patterns, identify feeding areas, and identify where turtles overlap with their primary threats (e.g., fisheries, vessel traffic).

## Research to Reduce Bycatch in Fishing Gear

We observe fisheries to understand the level of sea turtle bycatch and the ways in which turtles interact with fishing gear. We work with partners and industry to develop modifications to fishing gear and/or fishing practices to reduce sea turtle bycatch while at the same time retaining a sustainable catch of targeted species. These efforts include the development of [Turtle Excluder Devices \(TEDs\)](#) for use in trawl fisheries, use of circle hooks and certain bait types in longline fisheries, time and area closures/mesh size restrictions and low profile designs for gillnets, and modifications to Virginia pound net leaders and Atlantic scallop dredge gear.

[Learn more about our fishing gear research >](#)

## Sea Turtle Genetics

NOAA Fisheries' National Sea Turtle Molecular Genetics Center serves as a worldwide central repository for sea turtle tissue and DNA samples and constitutes a major area of research supporting sea turtle conservation. For example, a turtle's genetic "fingerprint" can be used to determine which nesting population it originated from.

[Learn more about our turtle genetics and isotope studies >](#)

## Life History Studies

Life history studies include gathering information on such things as migration patterns, where turtles nest and forage, growth rates, age to maturity, and sex ratios. This information is important in understanding key biological parameters that influence population trends and inform the conservation status.

## Documents

### DOCUMENT

#### [Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico](#)

Programmatic biological opinion on the Gulf of Mexico oil and Gas Program in federal waters...

[Southeast](#), [National](#)

### DOCUMENT

#### [Integrated Bayesian models to estimate bycatch of sea turtles in the Gulf of Mexico and southeastern U.S. Atlantic coast shrimp otter trawl fishery](#)

Elizabeth A. Babcock, Michael Barnette, James Bohnsack, John Jeffery Isely, Clay Porch, Paul M...

[Southeast](#)

### DOCUMENT

#### [Report of the Technical Expert Workshop: Developing Recommendations for Field Response, Captive Management, and Rehabilitation of Sea Turtles with Fibropapillomatosis](#)

NOAA and USFWS hosted a workshop in St. Petersburg, Florida on September 6, 2017 to seek input on...

[National](#)

## DOCUMENT

### Potential impacts of artificial reef development on sea turtle conservation in Florida

This study investigated the impacts Florida artificial reefs may have on sea turtle populations,...

Southeast

[More Documents >](#)

## Data & Maps

## DATA

### Recovery Action Database

Tracks the implementation of recovery actions from Endangered Species Act (ESA) recovery plans.

National

## MAP

### Virginia Pound Net Regulated Area Map & GIS Data

New England/Mid-Atlantic

## MAP

### Summer Flounder Sea Turtle Protection Area Map & GIS Data

New England/Mid-Atlantic

## MAP

### Large Mesh Gillnet Restricted Area Map & GIS Data

New England/Mid-Atlantic

**More Data and Maps >**